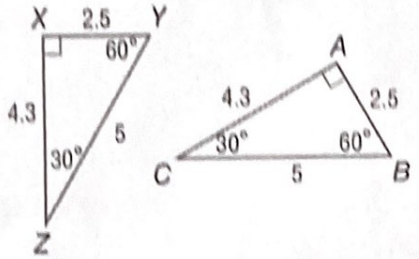
Name:_____ Per:_____

Unit 4 Congruent Triangles HOMEFUN Days 5-9

Unit 4 Day 5 Congruence and Triangles

Show that the following polygons are congruent by identifying all congruent corresponding sides and angles.

1.

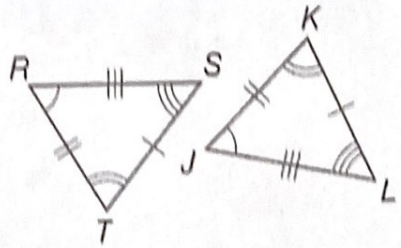


XY = AB $\angle X$ = $\angle$A

XZ = AC $\angle Y$ = $\angle$B $\Delta XYZ \cong$ ΔABC

ZY = CB $\angle Z$ = $\angle$C

2.

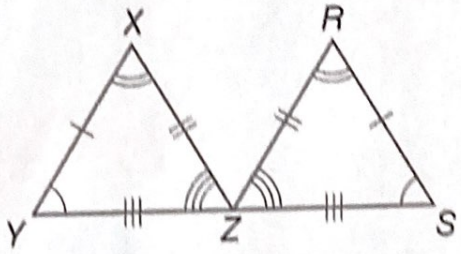


JL = RS $\angle K$ = $\angle$T

KL = TS $\angle L$ = $\angle$S $\Delta JKL \cong$ ΔRTS

JK = RT $\angle J$ = $\angle$R

3.

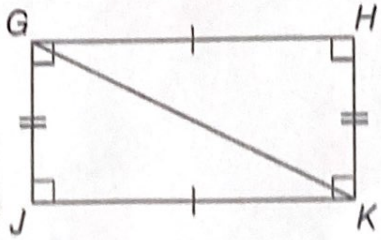


RS = XY $\angle X$ = $\angle$R

ZS = ZY $\angle Y$ = $\angle$S $\Delta RSZ \cong$ ΔXYZ

RZ = XZ $\angle Z$ = $\angle$Z

4.

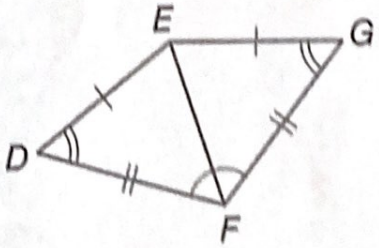


GK = KG $\angle GKJ$ = $\angle$KGH

GJ = KH $\angle J$ = $\angle$H $\Delta HKG \cong$ ΔJGK

JK = HG $\angle KGJ$ = $\angle$GKH

5.

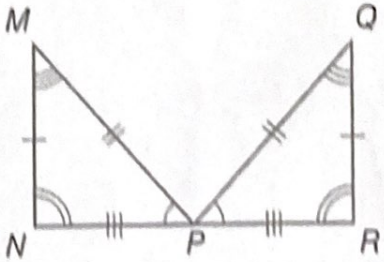


DE = GE $\angle DEF$ = $\angle$GEF

DF = GF $\angle DFE$ = $\angle$GFE $\Delta GFE \cong$ ΔDFE

EF = EF $\angle D$ = $\angle$G

6.



PQ = PM $\angle MNP$ = $\angle$QRP

QR = MN $\angle MPN$ = $\angle$QPR $\Delta NMP \cong$ ΔRQP

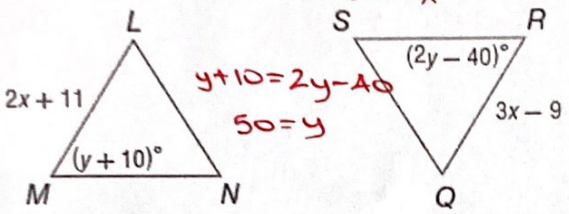
PR = PN $\angle NMP$ = $\angle$RQP

Given the following information, find the variables.

7. $\Delta LMN \cong \Delta QRS$

$2x+11=3x-9$

$20=x$



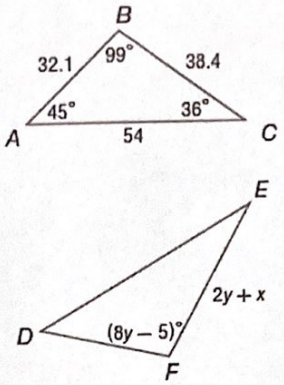
$y+10=2y-40$

$50=y$

$x =$ 20

$y =$ 50

8. $\Delta ABC \cong \Delta DFE$



$8y-5=99$

$8y=104$

$y=13$

$2y+x=38.4$

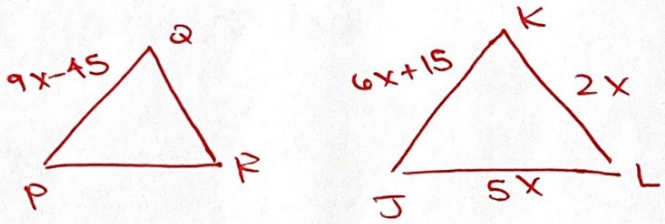
$2(13)+x=38.4$

$x=12.4$

$x =$ 12.4

$y =$ 13

9. Given $\Delta PQR \cong \Delta JKL$, $PQ = 9x - 45$, $JK = 6x + 15$, $KL = 2x$ *and* $JL = 5x$, what is the value of x? Draw the triangles to earn full credit.



$9x-45=6x+15$

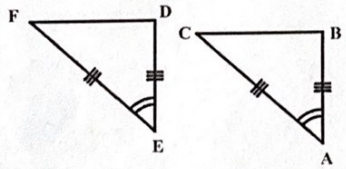
$3x=60$

$\boxed{x=20}$

Unit 4 Day 6 Proving Congruence – SSS /SAS

Directions: Decide which two triangles are congruent. Write **SSS, SAS, or NEI.** If it is **SSS or SAS**, write the congruent triangle statement. If it is NEI, explain your reasoning.

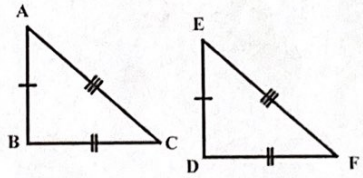
1.



SAS

$\Delta EDF \cong \Delta ABC$

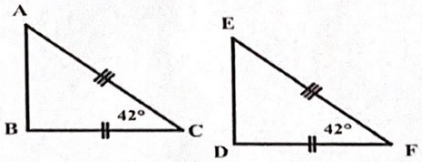
2.



SSS

$\Delta ABC \cong \Delta EDF$

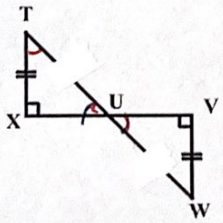
3.



SAS

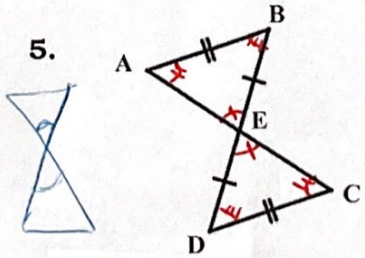
$\Delta ABC \cong \Delta EDF$

4.



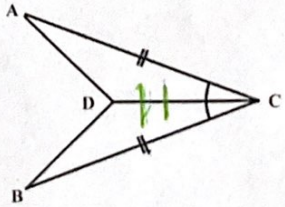
NEI

5.



NEI

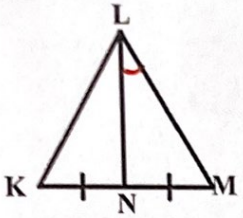
6.



SAS

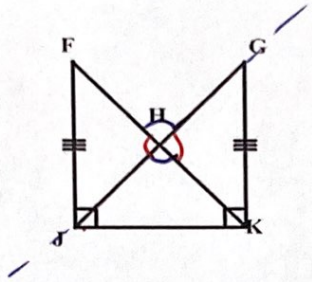
$\Delta ADC \cong \Delta BDC$

7.



NEI

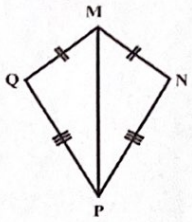
8.



SAS

$\triangle FJK \cong \triangle GKJ$

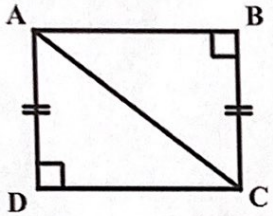
9.



SSS

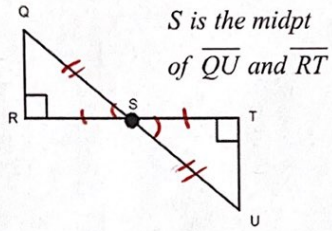
$\triangle MQP \cong \triangle MNP$

10.



NEI

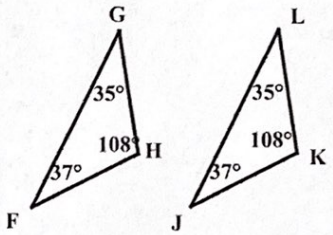
11.



SAS

$\triangle QRS \cong \triangle UTS$

12.

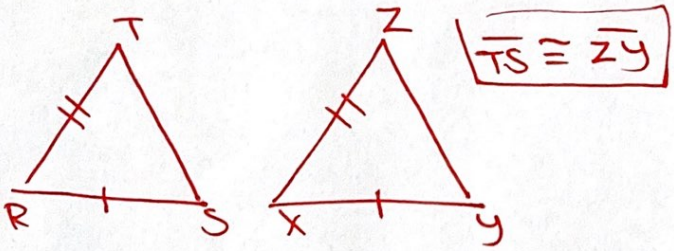


NEI

State the 3rd congruence that must be given to prove that ΔRST and ΔXYZ, using the indicated method. (what other corresponding parts are needed) if possible.

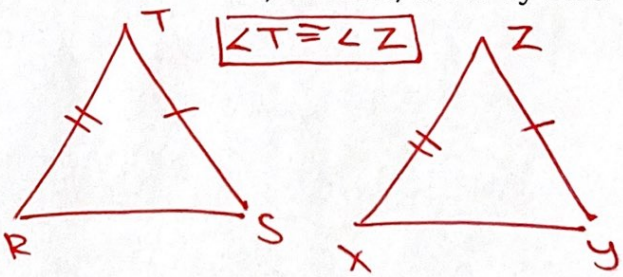
DRAW A PICTURE.

13. Given: $\overline{RS} \cong \overline{XY}$, $\overline{TR} \cong \overline{ZX}$, Prove by **SSS**



$\overline{TS} \cong \overline{ZY}$

14. Given: $\overline{YZ} \cong \overline{ST}$, $\overline{ZX} \cong \overline{TR}$, Prove by **SAS**



$\angle T \cong \angle Z$

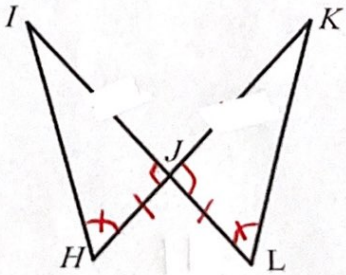
15. In the figure $\angle H \cong \angle L$ and $HJ = JL$. Which of the following statements is about congruence is true?

A. $\Delta HIJ \cong \Delta LKJ$ by ASA

B. $\Delta HIJ \cong \Delta KLJ$ by SSS

C. $\Delta HIJ \cong \Delta KLJ$ by SAS

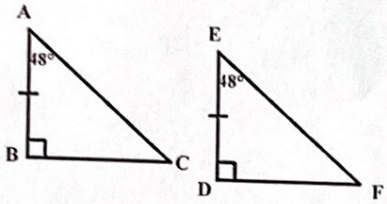
D. $\Delta HIJ \cong \Delta LKJ$ by SAS



Unit 4 Day 7 Proving Congruence – ASA /AAS

Directions: Decide if the two triangles are congruent. Write **SSS, SAS, AAS, ASA or NEI**. If it is SSS, SAS, ASA, or AAS write the congruent triangle statement. If it is NEI, explain your reasoning.

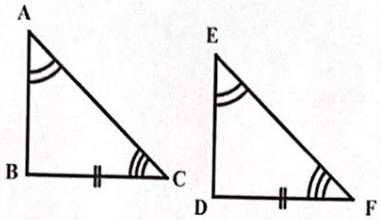
1.



ASA

$\triangle ABC \cong \triangle EDF$

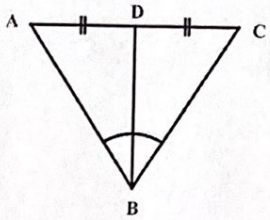
2.



AAS

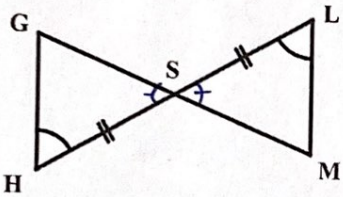
$\triangle ABC \cong \triangle EDF$

3.



NEI

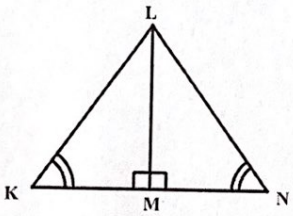
4.



ASA

$\triangle GHS \cong \triangle MLS$

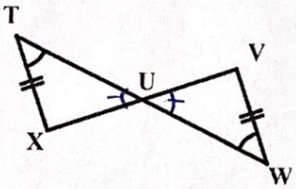
5.



AAS

$\triangle KLM \cong \triangle NLM$

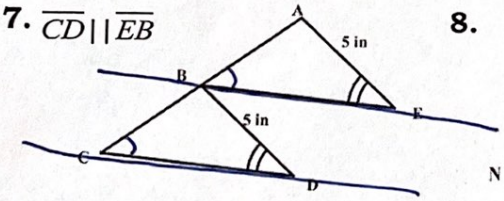
6.



AAS

$\triangle TXU \cong \triangle WVU$

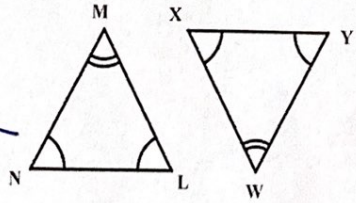
7. $\overline{CD} \parallel \overline{EB}$



AAS

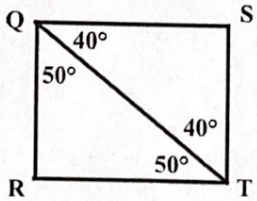
$\triangle CDB \cong \triangle BEA$

8.



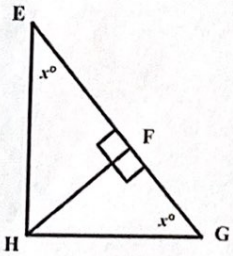
NEI

9.



Not Congruent

10.

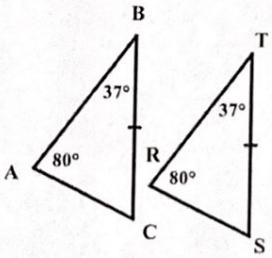


AAS

$\triangle EHF \cong \triangle GHF$

But they don't look congruent?

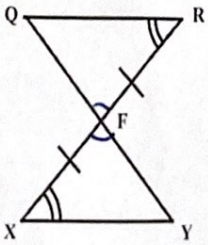
11.



AAS

$\triangle ABC \cong \triangle CTS$

12.

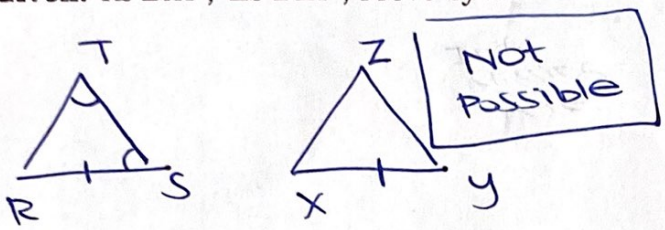


ASA

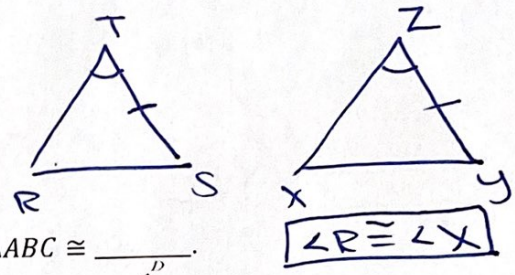
$\triangle XYF \cong \triangle RQF$

State the 3rd congruence that must be given to prove that $\Delta RST \cong \Delta XYZ$, using the indicated method. (what other corresponding parts are needed) if possible. **Draw a picture.**

13. Given: $\overline{RS} \cong \overline{XY}$, $\angle S \cong \angle T$, Prove by ASA



14. Given: $\overline{YZ} \cong \overline{ST}$, $\angle T \cong \angle Z$, Prove by **AAS**



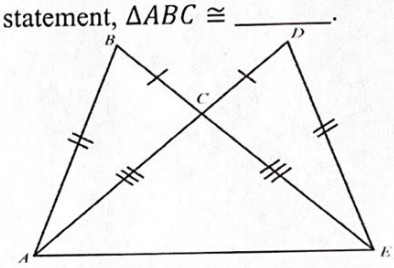
15. Refer To the figure to complete the congruence statement, $\Delta ABC \cong$ _____.

A. ΔACE

B. ΔEDC

C. ΔEAD

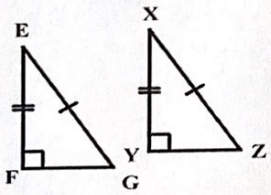
D. ΔEDA



Unit 4 –Day 8 Proving Triangle Congruence – HL

Directions: Decide which two triangles are congruent. Write **SSS, SAS, ASA, AAS, HL, or NEI.** If it is SSS, SAS, ASA, AAS, or HL write the congruent triangle statement. If NEI, explain your reasoning.

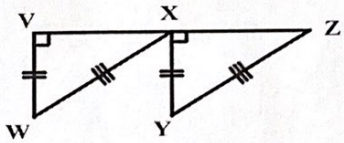
1.



HL

$\Delta EFG \cong \Delta XYZ$

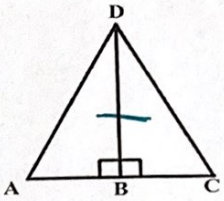
2.



HL

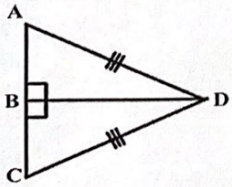
$\Delta VWX \cong \Delta XYZ$

3.



NEI

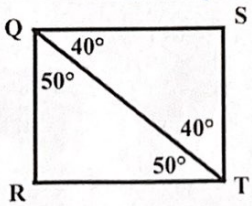
4.



HL

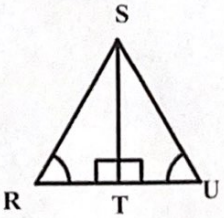
$\Delta ABD \cong \Delta CBD$

5.



Not congruent

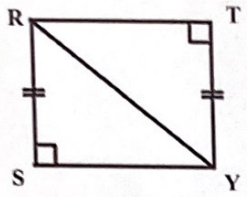
6.



AAS

$\Delta RTS \cong \Delta UTD$

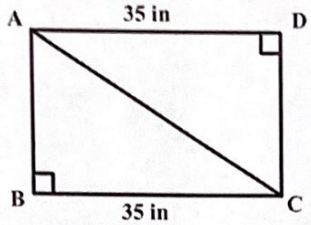
7.



HL

$\Delta RSY \cong \Delta YTR$

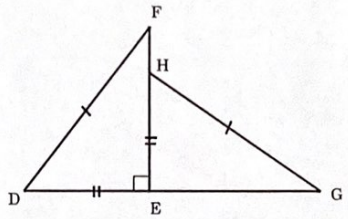
8.



HL

$\Delta ADC \cong \Delta CBA$

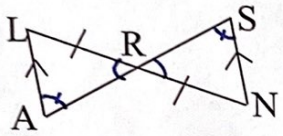
9.



HL

$\Delta DEF \cong \Delta HEG$

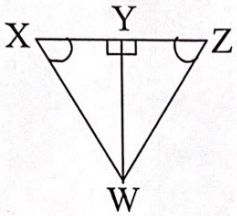
10.



AAS or ASA

$\Delta LAR \cong \Delta SNR$

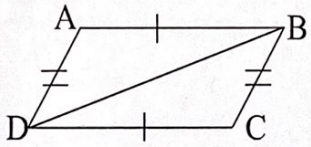
11.



AAS

$\Delta XYW \cong \Delta ZYW$

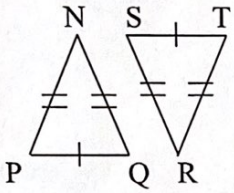
12.



SSS

$\Delta BAD \cong \Delta DCB$

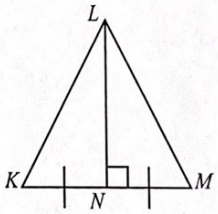
13.



SSS

$\Delta PNQ \cong \Delta SRT$

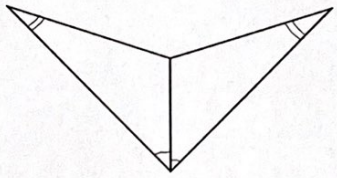
14.



SAS

$\Delta KLN \cong \Delta MLN$

15.



AAS

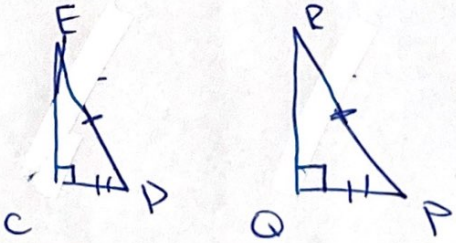
16. If $\Delta CED \cong \Delta QRP$ by HL-congruence, which of the following is true? DRAW A PICTURE.

A. $\angle C \cong \angle Q, \angle E \cong \angle R, \angle D \cong \angle P$

B. $\angle C \cong \angle Q, \angle E \cong \angle P, \angle D \cong \angle R$

C. $\angle C \cong \angle P, \angle E \cong \angle R, \angle D \cong \angle Q$

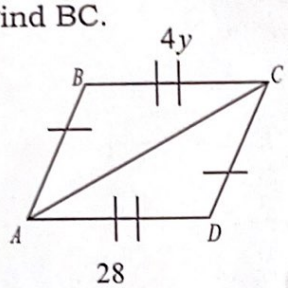
D. $\angle C \cong \angle R, \angle E \cong \angle Q, \angle D \cong \angle P$



Unit 4 – Day 9 – Triangle Congruence – CPCTC

State how the given triangles are congruent, (if possible) then find the requested information.

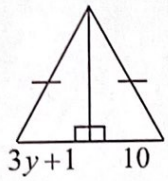
1. Find BC.



Reason: SSS

$BC =$ 28

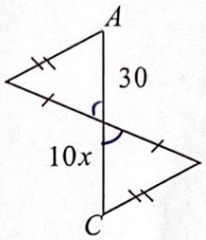
2. Find y.



Reason: HL

$y =$ 3

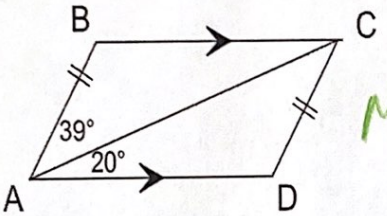
3. Find AC



Reason: Not Possible

$AC =$ _____

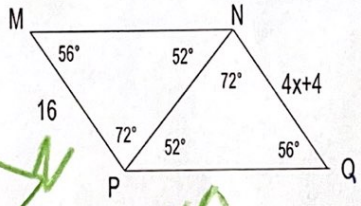
4. Find $m\angle ADC$



Reason: SAS

$m\angle ADC =$ 121°

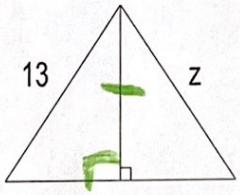
5. Find NQ



Reason: ASA

$NO =$ 16

6. Find z



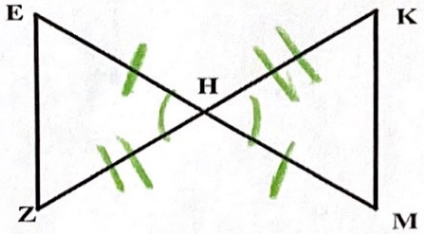
Reason: Not Possible

$z =$ _____

Write a congruency statement proving the following statements.

7. Given: H is the midpoint of $\overline{EM}$ & $\overline{ZK}$

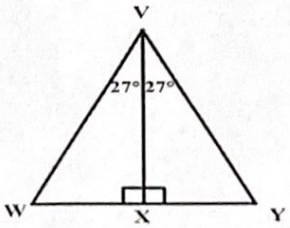
Prove: $\overline{EZ} \cong \overline{KM}$



$\overline{EH} \cong \overline{MH}$, $\overline{ZH} \cong \overline{KH}$, $\angle EHZ \cong \angle MHK$

8. Given: Diagram

Prove: $\angle W \cong \angle Y$



$\angle WVX \cong \angle YVX$, $\overline{VX} \cong \overline{VX}$, $\angle VXW \cong \angle VXY$